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mediate space there are many names of high distinction (among them Bryant and Longfellow), and none that have not won a worthy place in their respective styles or departments of literature. Moreover, they have all of them laid out their full strength in this labor of love. The consequence is that we have a miscellany of rare excellence and attractiveness. At the same time, the portraits are finely executed, and those of them on which we are qualified to pass judgment are as faithful as they are beautiful.

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19. — 1. *Elements of the Differential and Integral Calculus.* By William Smyth, A. M., Professor of Mathematics in Bowdoin College. Portland: Sanborn and Carter. 1854. 12mo. pp. 232.
2. *A Text-Book of Analytic Geometry; on the Basis of Professor Peirce's Treatise.* By James Mills Peirce, A. M., Tutor of Mathematics in Harvard College. Cambridge: John Bartlett. 1857. 12mo. pp. 228.
3. *Elements of Plane and Solid Geometry. Together with the Elements of Plane and Spherical Trigonometry, and an Article on Inverse Trigonometrical Functions.* By Gerardus Beekman Docharty, LL. D., Professor of Mathematics in the New York Free Academy. New York: Harper and Brothers. 1857. 12mo. pp. 189.

Professor Smyth's treatise is based on the method of Leibnitz, the use of the differential of the quantity under analysis, in contradistinction to Newton's method of the differential coefficient. His reasons for adhering to this method, which is abandoned in recent French and English text-books, seem to us conclusive. We have read enough of the work to satisfy ourselves that it is worthy of the author's distinguished reputation as no less a successful teacher than a profound scholar. We doubt whether the subject can be treated with greater simplicity of style, or by a more apt series of illustrative problems. The same praise is due to all Professor Smyth's text-books, which make a nearer approach to the explicitness of oral instruction than any similar treatises that have fallen under our eye; and, with reference to one of the series, our judgment has been confirmed by the opportunity of comparing it with other manuals in the actual labor of teaching.

Mr. Peirce's treatise is very full and clear in definition and explanation, and is particularly valuable as comprising illustrations drawn from Physics. It will adequately task, but not exceed, the capacity of the well-prepared student, will furnish for him a bracing course of intellectual gymnastics, and will at once exalt his conception of the grandeur, and enlarge his comprehension of the analytic and solvent power, of the higher mathematics. The work shows that its accomplished author, in pursuing his father's arduous path, has not forgotten the slow and measured steps by which alone the pupil can be led up toward the eminence of clear vision on which the teacher stands.

Professor Docharty's work is distinguished equally by condensation and simplicity. With reference to the properties of the circle, it adopts, in common with many recent treatises, the treatment of the circle as a polygon with an infinite number of infinitely small sides, to the exclusion of the unsatisfactory *reductio ad absurdum* of the older treatises. In a very cursory examination of the book, we see nothing that we could wish to have otherwise; and, while there are other manuals of which we can say the same, we are acquainted with none which we should prefer to this.

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20. — *Handbook of Railroad Construction; for the Use of American Engineers. Containing the necessary Rules, Tables, and Formulæ for the Location, Construction, Equipment, and Management of Railroads, as built in the United States.* With 158 Illustrations. By GEORGE L. VOSE, Civil Engineer. Boston: James Munroe & Co. 1857. 12mo. pp. 480.

THIS must be an invaluable book to an engineer, and, beyond our expectation, we find it highly interesting, and richly instructive to a non-professional reader. While it covers the entire ground of railway construction and management, and gives all requisite working formulæ with the processes by which they are reached, it shuns technical language wherever it can be avoided, and enters with minuteness and precision into the practical details, which demand the diligent heed of railroad superintendents and directors, and which have a personal interest for all intelligent travellers, who would know the comparative trustworthiness of the materials, structure, and machinery to which they commit their lives. We would say emphatically, that a manual of this sort ought to be in the hands of every man who holds a place of trust in the affairs of any of our railways. We are especially glad to find that the author's leaning is to the prudent rather than to the heroic side of all professional questions. Thus his formulæ are based on one fourth part of the outside strength of materials; his rules for bridge-making, &c. comprise safeguards against even remotely contingent perils; and he furnishes mathematical demonstrations of the